

OUTLINE COMPREHENSIVE ROUND 2 SITE CHARACTERIZATION SUMMARY AND DATA GAPS REPORT

Executive Summary

1.0 INTRODUCTION

Purpose of Report

Summary of Overall Objectives of the RI/FS (as defined in the AOC/SOW and the Work Plan)

Site Background (brief site description, site history)

Report Organization

2.0 SOURCES OF ENVIRONMENTAL DATA

- Pre-AOC
- Round 1
- Round 2
- Brief Description of Other Non-RI/FS Datasets

3.0 CONCEPTUAL SITE MODEL SUMMARY (BRIEF, HARBOR-WIDE SCALE)

- Physical (sediment stability, hydrology, introduce concept of “major physical environment areas of the river”)
- Chemical Sources, Release Mechanisms, and Transport Pathways to the Site
- Chemical Distribution and Potential Exposure Media
- In-River Chemical Mobility, Fate & Transport
- Human Receptors and Exposure Pathways
- Ecological Receptors and Exposure Pathways

4.0 PHYSICAL SETTING

- Land Use
- Geology
- Hydrogeology
- Surface Water Hydrology

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- Physical System (bathy [include descriptions of dredging and other alterations to the system to support harbor activities], SPI, hydrodynamic modeling)
- Sediment Characteristics (grain size, stratigraphy)
- Habitat
- Human Access and Use

5.0 IDENTIFICATION OF SOURCES

- **ISA Sources** (table and river mile maps summarizing upland site summaries)
- **Upstream Sources** (Updated Work Plan lists of upstream sources, permits, land use, map)

6.0 IN-RIVER CHEMICAL DISTRIBUTION (MOSTLY MAPS & TABLES)

6.1 Sediment

- Define Nature and Extent data set (both “Historical” Non-LWG and LWG data through Round 2) -summary, main presentation in appendix)
- Horizontal and vertical spatial trends for indicator chemicals by major river environment areas (RMs 10-7, 7-5, 5-3, 3-2, Swan Island Lagoon and channel versus nearshore areas) w/ harbor-wide summary maps
- Sediment data presented = R1/2A/2A archived/2B, and post 1997 non-LWG data
- Time Trends of COIs in Sediment

6.2 Transition Zone Water and Groundwater Seeps

6.3 Surface Water

6.4 Biota

- Tissue Chemistry (R1 tissue, R2 chinook, R2 multiplate, R2 benthic invertebrate)
- Comparison of tissue concentrations to other media concentrations

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6.5 Upstream and Downstream Conditions

7.0 OVERVIEW OF FATE AND TRANSPORT PROCESSES

7.1 Source Processes

- Groundwater & Transition Zone Water (dissolved transport, facilitated transport, NAPL, attenuation processes, sediment loading, surface water loading)
- Seeps
- Stormwater
- Erodible soils
- Over-water releases
- Atmospheric deposition

7.2 In-River Processes

- Sediment (attenuation, burial, disbursement, sediment transport, hydrologic events)
- Surface Water

7.3 Food Web Model

8.0 INITIAL HUMAN HEALTH RISK EVALUATION SUMMARY

- Identify initial COPCs: Summarize those chemicals in sediment, surface water, groundwater seeps, and tissue that were identified as COPCs based on the available data selected for use in the HHRA.
- Identify receptors and exposure pathways: Summarize the receptors and exposure pathways selected for quantitative evaluation in the HHRA.
- Summary of initial risks: Summarize the results of the initial risk evaluation (non-cancer hazards and cancer risks as well as results of uncertainty assessment).
- Identify anticipated COCs: Summarize those chemicals and exposure pathways that will likely pose unacceptable risks to human health.

9.0 INITIAL ECOLOGICAL RISK EVALUATION SUMMARY

- Refine list of preliminary COPCs (from PRE) by receptor group based on additional data (e.g., surface water, benthic tissue, multiplate invert tissue).
- Identify receptors and exposure pathways: Summarize the receptors and exposure pathways selected for quantitative evaluation in the ERA (based on WP).

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- Summary of initial risks: Summarize the results of the initial risk evaluation for each receptor group.
- Identify anticipated COCs: Summarize those chemicals and exposure pathways that will likely pose unacceptable risks to ecological receptors.

10.0 PRELIMINARY IDENTIFICATION OF AREAS OF POTENTIAL CONCERN

- Identify potential ARARs
- Use of Background
- Identify initial RBCTs
- Summarize process for identifying AOPCs (see Eco and FS Frameworks)
- Proposed AOPCs
- Harbor-wide Issues
- Site Boundary

11.0 CONCEPTUAL SITE MODEL

11.1 Harbor-wide CSM

- Background
- Site Boundary
- River-wide risk issues (fish and wildlife)
- Surface water
- Areas not covered by AOPCs

11.2 CSMS for Areas of Potential Concern

11.2.1 AOPC #1

11.2.1.1 Physical Setting

- Location of AOPC, nearby facilities introduced
- **Figure 1:** Photo base, AOPC outline, STA, bathy contours, adjacent upland sites, outfalls, navigation channel, seeps, LWG and non-LWG sediment, surface water, and biota sampling locations
- Bullet summary of current and historical operations of nearby facilities and potential sources (including overwater and upstream)
- Offshore characteristics (historical configurations, dredging history, shoreline, nearshore benches, shipping channel, STA, bathy changes, beach stake changes)

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- Surface and subsurface conditions (stratigraphy).
- Onshore conditions (stratigraphy, aquifers, seeps, Upland Cross Sections extending into river)
- Hydrodynamic data

11.2.1.2 Chemical Distribution

Sediments

- Sampling history (Pre-LWG, LWG, other) including numbers of surface and subsurface sampling, reference to **Figure 1**.
- **Table 1.** Summary of chemical distribution (similar to Table 2 of the CSMs, with comparison to RBCTs added).
- **Table 2.** All data for AOPC (summary stats table here and an appendix organized by AOPC for ALL the data)
- **Concentration/frequency plots** for chemicals > criteria
- Discussion of chemical distribution (> criteria) by chemical
 - Lateral – **Maps** – COI concentration contours within AOPC
 - Depth – **Figures** – Cross-sections of COI chemical concentrations vs. lithology.

Benthic Toxicity

As above

Surface Water

As above

Transition Zone Water

As above

Other testing (e.g., sculpin, crayfish, clams)

As above

11.2.1.3 Potential Sources

- Overwater Discharge
- Surface Water/Stormwater/Overland Transport (including combined sewers and industrial point discharges)
 - Table for each outfall

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- Catchment area plots
 - Table – Outfall ID, permit type and status, outfall size, outfall material, status, predominate discharge
- Groundwater
 - Plume Maps
 - COIs
 - Seeps (locations, potential or detected COIs)
- Riverbank Erosion
 - Locations
 - COIs
- Sediment Transport
 - Upriver sediment chemistry
 - Sedimentation
 - Erosion
 - Settling/Resuspension
 - Chemical transformation, redox
 - Biological processes
 - Sorption

11.2.1.4 Relationship of Upland Sources to Chemical Distribution

The general discussion should include the extent of elevated COIs in sediment, surface water, transition zone water, and biota, and their potential relationship to the above sources

11.2.1.5 Human Receptors and Potential Exposure Pathways

Discussion on human receptors and potential exposure pathways presented by AOPC noting that most human exposures are described as either harbor-wide or by human use area (e.g., beaches).

CSM Figure

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11.2.1.6 Ecological Receptors and Potential Exposure Pathways

Discussion of preliminary identification of location-specific risk areas (AOPCs) and Site-wide risks by receptor.

CSM Figure

12.0 DATA GAPS AND ADDITIONAL DATA NEEDS

Harbor-wide Data Gaps

Nature & Extent

Human Health Risk

Ecological Risk

Feasibility Study

Source ID (Including: are there upland sources and pathways without expected in-river impacts?)

Data Gaps for AOPCs

N&E at AOPCs

ID Sources & pathways at AOPCs

Risks at AOPCs

APPENDICES (NOT A COMPLETE LIST)

1. Regressions (e.g., fines to COI concentrations)
2. HH Initial Risk Evaluation
 - Data Evaluation: Discuss data selected for use in HHRA and identify initial COPCs
 - Exposure Assessment: Identify receptors and exposure pathways for quantitative evaluation, describe process to calculate exposure point concentrations, and present calculated intakes.
 - Toxicity Assessment: Present toxicity information for COPCs.
 - Risk Characterization: Calculate cancer risks and non-cancer hazards. Present in context of uncertainty.
 - Uncertainty Assessment: Summarize uncertainties in risk evaluation and overall impact on risks.
 - Summary and Conclusions: Present those chemicals and media that are likely to pose unacceptable risks based on results of initial risk evaluation.
3. Ecological Draft Risk Evaluation
 - Problem formulation: Summary from Work Plan (receptors, assessment endpoints, exposure pathways, assessment measures)

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- Data Evaluation: Discuss data (tissue, toxicity, water, sediment) selected for use in ERA to identify initial COPCs
 - Exposure Assessment: Calculation/presentation of exposure for various exposure pathways (e.g., tissue, dietary, water) by receptor group (benthic invertebrates, fish, amphibians/reptiles, birds, mammals, plants)
 - Effects Assessment: Present toxicity metrics for COPCs, including TRVs, AWQC or other water SLs, and summary of development of sediment quality values (SQVs) from benthic predictive approach
 - Risk Characterization: Quantitative risk assessment (compare exposure estimates and toxicity metrics), qualitative risk assessment (e.g., for aquatic plants) and risk discussion
 - Uncertainty Assessment/Data Gaps: Summarize uncertainties in risk evaluation and overall impact on risk estimates.
 - Summary and Conclusions: Present ecological COPCs and preliminary identification of areas (including maps) potentially posing unacceptable risks to ecological receptors based on results of risk evaluation.
4. Usability of historical data
 5. CDs with various databases
 6. Addenda to Upland Site Summaries
 7. Modeling documentation
 8. Derivation of RBCTs

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